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ABSTRACT

A descriptive study was made of the roles of training and federal programs in helping youths gain employment in selected high-wage occupations that do not require a four-year college degree. Interviews conducted with federal agency officials and industry representatives found little hard data but elicited officials' views on this issue. The study noted that although about 87 percent of U.S. youth complete high school, only 24 percent complete a four-year college degree by age 34. However, post-high school training is needed for a number of well-paying technical jobs. Six of these occupations were examined in the study: machinists, drafters, electrical and electronic technicians, registered nurses, radiologic technologists, and paralegals. The study found that there are various training paths to these occupations: a four-year bachelor's degree, an associate (two-year) degree, tech-prep programs, technical institutes, apprenticeships, and on-the-job training. For most of these occupations, the two-year associate degree programs were the most common paths, although this varied among the occupations and in different parts of the country. Barriers to students being trained in these occupations included the following: parental resistance, unwillingness of youths to relocate for training, determining relevance of training to later employment, and prevalence of four-year degree job applicants who might be selected ahead of two-year applicants depending on the job market. Financial aid did not appear to be a problem. The study summarized the role of several federal programs (Pell Grants, the Federal Family Education Loan Program, Vocational Education---Basic Grants to States, and the Job Training Partnership Act and Job Opportunities and Basic Skills Training) programs in providing financial aid for students to train in skilled occupations. (KC)

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The Honorable William D. Ford
Chairman, Subcommittee on Postsecondary
Education and Training
Committee on Education and Labor
House of Representatives

Dear Mr. Chairman:

This letter is in response to your request that we examine the roles of training and federal programs in helping youths gain employment in selected high-wage occupations that do not require a 4-year college degree. Through interviews with federal agency officials and industry representatives, we found little hard data on this process but did obtain their views on its issues. While we are unable to provide you with conclusive answers to your questions, this letter provides information on potential barriers to training and employment that may be helpful in future deliberations about how federal programs can help youths obtain employment in occupations similar to those we studied. This letter summarizes a recent briefing we provided to your staff. We do not plan further work in this area unless requested to do so.

BACKGROUND

While the vast majority of youths (about 87 percent) complete high school, only 24 percent complete a 4-year college degree by age 34. Yet, a high school education has become less effective than it used to be in protecting young family heads against poverty.[1] There has been much discussion of the need for more and better training for the "middle half" of our youths--those who complete high school but not 4 years of college. One argument is that there has been a decline in well-paying U.S. jobs that require few or no special skills.

Currently, a variety of federal training and education programs serve youths. However, it is not clear how federal programs support subbaccalaureate training that leads to employment in well-paying jobs. In your September 21, 1993,

[1]See U.S. General Accounting Office, Poverty Trends, 1980-88: Changes in Family Composition and Income Sources Among the Poor, GAO/PEMD-92-34 (Washington, D.C.: September 10, 1992).

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letter, you specifically asked us to address three questions for selected occupations of this sort:

1. What are the different paths by which youths train or prepare for a given occupation?

2. What role do federal programs play in training for employment in these occupations?

3. What are the barriers to and opportunities for training leading to employment in a given occupation?

Because of limited national data that link an individual's current occupation with the type of training and federal support he or she might have received, and the expected diversity of issues across occupations, we used a case study approach focusing on six occupations: machinists, drafters, electrical and electronic technicians, registered nurses, radiologic technologists, and paralegals. In selecting these occupations, we established some criteria common to all: they offer high projected growth and high income and typically require training beyond high school but less than 4 years of college. However, we also wanted some diversity in the six occupations, and we selected them to provide gender balance and to include at least one occupation that uses apprenticeships.

In order to answer the study questions, we interviewed officials from the departments of Education, Health and Human Services, and Labor. We also interviewed representatives of 19 associations, primarily representing employees and employers involved with the six occupations. (See appendix I.) We reviewed Bureau of Labor Statistics (BLS) and Department of Education data and also conducted a literature review for pertinent studies and articles. However, we did not obtain comments from the departments of Education, Health and Human Services, and Labor on a draft of this letter.

TRAINING PATHS

In discussions with representatives of national organizations and review of BLS data, we discovered multiple training paths for each of the six occupations. Thus, prospective workers have some flexibility in preparing for a career. However, most of these occupations require 2 years of education beyond a high school diploma. Community college training is a significant path in each occupation, except for machinists, who undertake it to a lesser extent. A 4-year college program is also a path for most of the occupations.

The major paths of training for our selected occupations are shown in table 1. While the table provides a structure for describing the training paths, it is important to understand that these paths are not as neatly separate from one another as the table might suggest.

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Table 1: Possible Major Training Paths by Occupation[a]

Training path	Machinist	Drafter	Electrical and electronic technician	Registered nurse	Radiologic technologist	Paralegal
Bachelor's program		Bachelor's degree (4 years)	Bachelor's degree (4 years)	Bachelor's degree (4 years)	Bachelor's degree (4 years)	Bachelor's degree (4 years); may be in paralegal studies or liberal arts
Community college	Associate degree (2 years) or courses toward apprenticeship	Associate degree (2 years)	Associate degree (2 years)	Associate degree (2 years): primary path	Associate degree (2 years): primary path	Associate degree (2 years)
Other post-secondary	Tech Prep or 2+2 program; may involve apprenticeship	Technical institute (18 months and degree); primary paths	Technical institute; primary paths	Hospital-based diploma program (declining the last 2 or 3 years)	Hospital-based certificate program	Proprietary school (60 hours, American Bar Association approved)
Employer-provided formal or informal training	Apprenticeship (4 to 5 years)	Informal on-the-job training after high school				On-the-job training for a legal secretary or an individual with a bachelor's degree in liberal arts

[a]Dotted lines indicate fluidity between paths.

Formal skill certification or licensure is required of only nurses (all states) and radiologic technologists (26 states) and, possibly as a consequence, these occupations seem to have the most well-defined training paths. However, there is some effort in almost all the occupations to ensure minimum skill standards. In five of the six occupations (all except machinists), various organizations accredit training programs, and many are working to strengthen or standardize school curricula. Furthermore, three occupations (machinists, drafters, paralegals) have adopted voluntary certification, concerned that minimum skill standards should be authenticated.

To demonstrate the flexibility available in preparing for these occupations, we discuss two contrasting examples--registered nurses and machinists. The training paths for nurses are clearly defined and the pattern of available paths is similar to most of the other occupations. Training for machinists, however, seems to be the least well-defined and the most different from the other occupations but, perhaps similar to other trade occupations.

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Registered Nurses

We determined that there are three major paths to becoming a registered nurse:

1. Community college. This 2-year course of study requires completion of 60 to 70 credit hours of study, including a clinical practicum, to obtain an associate degree of nursing. According to data from the National League for Nursing, this is the most prevalent path to registered nursing, representing about 65 percent of annual graduates.

2. Bachelor's degree. This is a 4-year program, requiring 120 to 130 credit hours and a clinical practicum. According to a nursing association representative, this course provides more in-depth study, more independent study, additional research, and more emphasis on community health than the 2-year program.

3. Diploma program. This is a hospital-based program that varies in length. Most programs consist of 2 years with training conducted by staff in hospitals. There is a trend toward taking some college classes so that credits may be more easily applied toward a degree.

Regardless of the path of study chosen, the same licensing examination is given. Furthermore, we were told that graduates of all three paths seem to get hired at about the same rate, but those with 4-year degrees are more likely to advance.

Machinists

Training paths for machinists are not as well prescribed as for nurses. Machinist training varies from formal apprenticeship programs to informal on-the-job training. Community colleges and technical institutes increasingly offer classroom training in connection with company or association training programs. We categorized machinist training into three paths, noting significant variation within each:

1. Community college. Community colleges provide machine shop training with two courses of study: (a) associate degrees in manufacturing technology or metal-cutting technology and (b) classroom training as part of formal apprenticeship programs.

2. Technical preparation. Youth apprenticeship programs start in the junior year of high school and last through 2 years of community college or technical institute training.

3. Apprenticeship. A typical formal apprenticeship program requires 8,000 to 10,000 hours of training and work over 4 to 5 years. About 60 percent of the formal and informal apprenticeship programs involve attending some classroom training at community colleges. Additionally, in an informal apprenticeship or on-the-job training, a high school graduate may go directly to work (often as a helper or floor sweeper) before the company begins machinist training. In some cases, the high school graduate may have had some pre-apprenticeship

training. However, we were told that this approach and apprenticeships in general are declining.

THE ROLE OF FEDERAL PROGRAMS

In a GAO report, we identified a very large number of federal programs that support education and training.[2] For this study, we identified the largest ones that, from their purposes and characteristics, we expected to play an important role in supporting training for the six occupations. These programs were Pell Grants, the Federal Family Education Loan Program (FFELP), Vocational Education--Basic Grants to States, and the Job Training Partnership Act (JTPA) and Job Opportunities and Basic Skills Training (JOBS) programs.

We found that these major federal programs do not collect statistics on their support of training for specific occupations. However, given the nature of training for most of the six occupations--community college and 4-year schools--student financial aid like the Pell grants and FFELP loans probably plays the largest role in training for them.

Pell Grants and FFELP Loans

Title IV of the Higher Education Act of 1965 provides for several loan and grant programs to help postsecondary students meet their financial needs. The largest are the Pell Grant and FFELP programs. FFELP, formerly the Guaranteed Student Loan Program, includes Stafford Loans, Parent Loans for Undergraduate Students, and Supplemental Loans to Students.[3] Because of the large role played by formal schooling in the six occupations, Pell grants and FFELP may be the most widely used programs to support training for the types of occupations we examined, with the exception of machinists. Such loans and grants support eligible students in accredited programs at a variety of institutions, regardless of what course of study is chosen.

While data on the support of specific courses of study are not available, funds are widely distributed across types of institutions involved in the training paths we identified. Estimates from the National Postsecondary Student Aid Study indicate that for the 1989-90 academic year, approximately 58 percent of all title IV grants and loans went to students at 4-year public and private colleges, 16 percent to 2-year or less public and private schools, and 26 percent to proprietary schools (where programs are generally shorter than one year).

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[2]See U.S. General Accounting Office, Multiple Employment Training Programs: Overlapping Programs Can Add Unnecessary Administrative Costs, GAO/HEHS-94-80 (Washington, D.C.: January 28, 1994).

[3]Other title IV programs include the Supplemental Education Opportunity Grants, College Work Study, and Perkins loans.

Vocational Education--Basic Grants to States

Title II of the Carl D. Perkins Vocational and Applied Technology Education Act authorizes basic grants to states for vocational education. We were unable to determine how large a role this program plays in increasing access to or shaping the characteristics of training for the six occupations. However, only 37 percent of fiscal year 1995 Perkins title II, part C, vocational education proposed funding will be to postsecondary institutions nationwide, in several states as little as 15 percent. The remainder goes to secondary schools. Furthermore, federal money is estimated to represent only $1 of every $10 spent on vocational education. This may limit the federal government's influence over such activities.

Job Training Partnership Act Programs

JTPA is the principal federal program for job training and related services. It was enacted to provide job training and employment-seeking skills to economically disadvantaged individuals who need training and other labor market services to obtain employment. We believe it is unlikely that JTPA is heavily involved in supporting training for the six occupations we studied because of the length of postsecondary schooling typical of their training paths and the presence of many JTPA clients who are not high school graduates. Indeed, BLS surveys show that 86 percent of machinists and over 98 percent in the five other occupations had 12 or more years of schooling.

Another factor limiting JTPA involvement in these occupations is that, in addition to occupational training, JTPA funds support activities such as job search and remedial education. Furthermore, in a GAO report, we found that only 25 percent of JTPA's occupational training (which represented 66 percent of total training) was geared toward higher-skill occupations, such as machinists and drafters.[4]

Job Opportunities and Basic Skills Training Program

The JOBS program is a federal and state effort to help people in the Aid to Families with Dependent Children program obtain jobs and avoid long-term welfare dependence through education, training, work experiences, and services. An agency official told us that there is no federal limit on the length of training that state JOBS programs may support. However, enrollment in the postsecondary degree programs like those we identified is infrequent. In a recent report, we found that in fiscal year 1992 about 10 percent of JOBS education and training expenditures were for formal education at the postsecondary level, while almost 25 percent went for secondary and remedial

[4]See U.S. General Accounting Office, Job Training Partnership Act: Services and Outcomes for Participants With Differing Needs. GAO/HRD-89-52 (Washington, D.C.: June 9, 1989).

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education.[5] This is partly because many JOBS clients lack the qualifications for these degree programs, requiring general education diploma preparation or remedial education instead.[6] Further, like JTPA, JOBS funds are also used for activities other than training, such as job search.

Apprenticeships

The Department of Labor's Bureau of Apprenticeship and Training registers apprenticeship programs or recognizes state agencies to register them but does not provide direct apprenticeship training. The program provides technical assistance to existing sponsors and entities that would like to establish sponsors. In fiscal year 1994, $17 million was appropriated to administer the program.

Apprenticeships are declining, however. While registered apprenticeships exist for about 800 occupations, about two thirds work in 20 occupations, mainly construction and the metal trades. There were about 6,000 machinist apprentices in 1990.

Other Programs

We identified some other potentially applicable programs in the Department of Health and Human Services that we expected to have a small role in the subbaccalaureate postsecondary paths. However, we found that the Bureau of Health Professions' nursing program provides assistance only to 4-year programs, and their funding for allied health professions is small and supports programs in several other specialties as well as that of radiologic technologists.

Summary

Student aid programs (Pell grants and FFELP) are likely to represent most of the federal assistance supporting training for this group of high-paying, high-growth occupations. However, because of the way the federal programs we examined are structured, and because they support groups in addition to the particular subgroup of youths we focused on, we could not determine how much federal support specifically goes to subbaccalaureate training for youths.

POTENTIAL BARRIERS FOR TRAINING LEADING TO EMPLOYMENT

As a result of our literature search, we developed a fairly extensive list of potential barriers we expected would be mentioned in our interviews. We then discussed the issue of barriers in general terms during many of our interviews with federal officials and

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[5]See U.S. General Accounting Office, JOBS and JTPA: Tracking Spending, Outcomes, and Program Performance, GAO-HEHS-94-177 (Washington, D.C.: July 15, 1994).

[6]See U.S. General Accounting Office, Welfare to Work: States Serve Least Job-Ready While Meeting JOBS Participation Rates, GAO-HRD-93-2 (Washington, D.C.: November 12, 1992).

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representatives from national organizations. However, when we compared the barriers they mentioned with those on our original list, we found little overlap. We found that many of the barriers we identified in the literature were not mentioned in our interviews, while additional ones were identified through our discussions. Here we will share highlights of what we learned about some potential barriers.

1. Although financial barriers to training are mentioned in the literature, we found little evidence of them in the six occupations we explored. This issue was not raised in our interviews, and, as we noted above, federal student aid programs are available for accredited programs at technical institutes, community colleges, and 4-year schools.

2. No concerns were raised in our interviews about the overall quality of the training received from accredited schools.

3. The issue of trouble completing these training programs was not raised in our interviews, nor did we readily find occupation-specific data to assess this issue.

4. In contrast, it was claimed by both federal and private sector officials that students are not directed toward these occupations (and the training required for them) because high schools are primarily oriented toward 4-year college preparation. Furthermore, it was stated that middle-class parents hold negative views of the technical occupations.

5. It was suggested that some high school graduates do not go on to postsecondary training because they are unwilling to relocate for needed training, even to a nearby city.

6. We were told that ascertaining the relevance of training to later employment was difficult because the skills an employer would consider most relevant would vary quite a bit across employers within each of the six occupations. For example, machinists employed in a "captive shop" of a manufacturing plant are likely to need skills different from those of machinists in a "job shop," an independent small business serving a variety of manufacturers. Some regional differences may exist as well. While it may not be practical to expect training programs to prepare students for all possible settings, this does imply that a broad range of employers should be involved in setting skill standards.

7. In occupations in which a large proportion of employees have bachelor's degrees, there is the question of whether 2-year degrees are really competitive with 4-year degrees, both at the entry level and in later advancement. This is, to a large extent, an issue of labor supply and demand, which is hard to predict. Furthermore, it is not clear what the federal role should be in this regard. The current philosophy is to make consumers better educated about market conditions so they may make their own choices.

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If you have any questions or would like additional information, please call me at 202-512-5885 or Stephanie Shipman, Assistant Director for Public Assistance and Poverty Issues, at the same number.

Sincerely yours,

Robert L. York
Director for Program Evaluation
in Human Services Areas

APPENDIX I

ASSOCIATIONS INTERVIEWED

American Association of Engineering Societies
American Association for Paralegal Education
American Bar Association
American Design Drafting Association
American Electronics Association
American Medical Association
American Nurses Association
American Registry of Radiologic Technologists
American Society of Radiologic Technologists
Association for Manufacturing Technology
Institute of Electrical and Electronic Engineers
International Association of Machinists and Aerospace Workers
International Society of Certified Electronics Technicians
National Association of Legal Assistants
National Federation of Paralegal Associations
National League for Nursing
National Occupational Information Coordinating Committee
National Tooling and Machining Association
Vocational Industrial Clubs of America